Introduction

Eravacycline is a novel, fully synthetic fluorocycline antibiotic currently under review by the EMA and FDA for the treatment of complicated intra-abdominal infections. The purpose of this study was to evaluate the activity of eravacycline and comparators against global isolates of Enterobacteriaceae, Stenotrophomonas maltophilia, Staphylococcus aureus (including methicillin-resistant S. aureus), and Enterococcus spp., collected during 2016.

Methods

- A total of 4494 clinical isolates collected in 2016 from urinary, intra-abdominal and respiratory infections were tested.
- Distribution of the isolates tested, including resistance phenotypes, are shown in Figure 1.
- MDR was defined as resistance to ≤ 3 from cefepime/colistin/imipenem/trimethoprim/sulfamethoxazole (very low), aztreonam, gentamicin, a carbapenem (monophasic or entapenem) levofloxacin, piperacillin-tazobactam, tetracycline or tigecycline.
- The geographic origins of the clinical isolates are shown in Figure 2.
- Minimal inhibitory concentration (MIC) values were determined by both microdilution according to CLSI guidelines for eravacycline and comparators.
- Quality control testing was performed each day of testing as specified by the CLSI using Enterococcus faecalis ATCC 29212 and E. coli ATCC 25922. Pseudomonas aeruginosa ATCC 27853 E. coli ATCC 25812 and S. aureus ATCC 29213.
- Antibiotic susceptibility was determined using EUCAST breakpoints.

Results

- Susceptibility data, MIC50 values, and MIC ranges for eravacycline and comparators are shown in Tables 1 - 7.
- The susceptibility range of MDR Enterobacteriaceae was from 13.9% for cefotaxime to 94% for meropenem, with 67.8% of isolates susceptible to tigecycline.
- 76.5%, 87.1%, and 93.3% of MSSA were susceptible to tigecycline, minocycline and tigecycline, respectively.
- 64.8% of E. faecalis and E. faecium were susceptible to tigecycline.
- The MIC50 of eravacycline was at least 4-fold lower than tigecycline against Enterobacteriaceae, including against MDR isolates, MRSA and Enterococcus spp.

Conclusions

- Eravacycline demonstrated potent in vitro activity against Enterobacteriaceae, including MDR phenotypes, as well as clinically important Gram-positive organisms and S. maltophilia collected globally in 2016.
- Eravacycline demonstrated lower MIC50 values than tigecycline against Enterobacteriaceae, S. aureus, Enterococcus spp. and S. maltophilia, including MDR organisms.

References


Acknowledgements

This study was supported by Tetraphase Pharmaceuticals.